

## **TELEPHONE BRIDGING METHOD**

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### **BACKGROUND OF THE INVENTION**

#### **1. Field of The Invention**

5       The present invention relates generally to methods for routing and controlling telephone calls. More specifically, the present invention relates to a method for initiating a telephone call from a phone to a computer and having a computer call the phone back and bridge the call to an intended recipient.

#### **2. Description of The Related Art**

40       Mobile and cellular telephones have existed for several years and have recently become very popular. Due to the popularity of these telephones competition has arisen between various service providers. As a result of this competition some providers have developed creative rate plans to attract customers. Most service providers charge a fee based on the number of minutes the telephone is connected to a call, similar to a long distance call. Variations in the number of 15       prepaid minutes or certain time restrictions on when minutes may be used is common in the industry. In one common billing method, there is not any minutes charged for incoming calls, only for outgoing calls.

20       Various services are available that attempt to reduce the cost of long distance calls by determining the best rate available among several carriers. Such systems are not available for mobile and cellular telephones because only one service is available to the caller once the caller has signed a contract for telephone service.

25       It would be advantageous to develop a system to take advantage of rate differentials in plans that offer a lower rate for incoming calls.

#### **25 BRIEF SUMMARY OF THE INVENTION**

      In accordance with the present invention, a method for connecting a mobile or cellular telephone with a reduced rate service for incoming calls to a target telephone utilizes the Internet as a viable communications network via a computer system. The method comprises the steps of having the computer system call the sender telephone and the target telephone and then bridging 30       the two connections. This allows both ends of the call to treat the call as an incoming call, using the computer as the sender. There are several variations on how this may occur. In one

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embodiment the caller dials from the sender or source telephone to a local computer system connection. After at least two rings the caller disconnects. The computer system uses an automated caller-ID system to determine the sender's call-back number and calls the sender. Once the sender is connected to the computer system the sender instructs the computer system to call 5 the target number. This instruction can take many forms: the sender may dial the target number, the sender may dial a shortcut number pre-programmed into the computer system, or the caller may simply speak the name of the recipient utilizing voice recognition technology. The computer system then initiates a call to the recipient and connects the call. The computer then acts as the "bridge" connecting outgoing calls from the computer to both the "sender" and "receiver", with receiving a free; or lower rate, incoming call..

A variation includes the caller actually connecting with the computer system and communicating the target number on the first call. In this embodiment the computer system can then call the target receiver and the source simultaneously making for a smoother connection. In an additional variation the caller communicates with the computer system through a means other than a telephone call: a two way radio communication, a text message from using a two way pager system, an email message, point-and-click activation or any other means of communicating data to the computer system. Once receiving these instruction, the computer system completes the call to both parties.

A common feature of all of the embodiments is that both the sender and receiver 20 telephone recognizes the completed call as an incoming call. This provides substantial opportunities for cost savings on plans where incoming calls are billed at a lower rate than outgoing calls.

The computer system may comprise several computers linked in a network such as a local area network or LAN. One such system would use one computer to accept the incoming 25 message, a second computer to initiate and connect the calls, and a third to control the process. For the computer system to connect to the telephone system it will need a PBX system. The type of PBX system used is dictated by the expected traffic to be handled by any one computer system.

The telephone bridging method of the present invention is believed to provide a simple 30 method for taking advantage of differential rate plans. Specifically, the computer system treats the call in the most cost effective manner for a selected rate plan. Another example would be to

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use a computer as a local call recipient from the sender, wherein the computer completes a long-distance call over the Internet. Numerous uses of the computer "bridge" are contemplated to provide cost saving efficiencies over various rate plans utilized by cellular and mobile telephone service providers. The system is also useful for completing conference calls and the like, with 5 each telephone unit on the conference call being treated as participating in a two-party call.

It is, therefore, an object and feature of the subject invention to provide an automated bridge network for connecting a plurality of telephones through a computer in such a manner that the telephones treat the call in the most cost effective manner.

It is also an object and feature of the subject invention to use a computer bridge between 10 two telephones for connecting the telephones in a manner such that each telephone recognizes the connection as an incoming call.

It is a further object and feature of the subject invention to provide a bridge for connecting a plurality of telephones without the telephones communicating directly with one another over the public telecommunication system.

Other objects and features of the invention will be readily apparent from the 15 accompanying drawings and detailed description of the preferred embodiments.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a flow chart of an embodiment of the telephone bridging method of the present

20 invention.

FIG. 2 is a schematic of another embodiment of the telephone bridging method of the present invention.

FIG. 3 is a flow chart of the embodiment of Figure 2 of the telephone bridging method of the present invention.

25 While the invention will be described in connection with the preferred embodiments, it will be understood that it is not intended to limit the invention to those embodiments. On the contrary, it is intended to cover all alternatives, modifications, and equivalents as may be included within the spirit and scope of the invention as defined by the appended claims.

## 30 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to FIG. 1, the most basic embodiment comprises the method of communicating

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a source or sending number and a target or receiving number to a computer system as shown at block 10, the computer system then dials or connects the target number and the source number on separate lines via the computer, as shown in block 12, and the computer system connects the separate lines as shown at block 14, thus bridging or completing the telephone call between the 5 telephone addressed by the source number and the telephone addressed by the target number. In this manner, both telephones will recognize the call as an incoming call. Multiple target telephones can also be connected in this manner, whereby each telephone unit will treat the call as a two-party call between the telephone unit and the computer. There are numerous advantages to this system. In addition to redefining the bulk of any communication as an incoming call at both ends of the communication, the system will permit long distance calls to be made over the Internet and will both permit and provide a means for managing multi-party or conference calls.

The recipient or recipients of a call initiated by a source telephone will treat the telephone call as any incoming call. The source telephone will be able to selectively send the call to one or more local or long distance recipients in the most cost effective manner.

An expanded configuration is shown in FIG. 2. The source or sending telephone unit 16 is shown as a mobile phone. However, it should be recognized that the system and methods of the subject invention could be used with any source communication device. The target or receiving telephone unit 18 is shown as a generic telephone because for most applications it will not matter whether the target 18 is mobile or not. In this embodiment the computer system 20 is 20 made up of multiple components, namely: the incoming call server 24, the outgoing call server 26, file server 28, control console 30 and PBX unit 32. Incoming call server 24 receives from calls over PBX 32 and sends data to file server 28 for instructing the outgoing call server 26 to initiate calls. Outgoing server 26 retrieves necessary information from file server 28 and initiates calls over PBX 32. Control console 30 provides access to all processes for trouble shooting and 25 control purposes.

FIG. 2 also shows the interconnectivity relationship between the different components of the system of the subject invention.

FIG. 3 is an illustration of the chronological steps for completing a call in accordance the system in Fig. 2. Specifically, the system is initiated by a telephone call 32 from the sending or 30 source unit 16 to incoming call server 24, as shown at 34. Standard caller ID technology may be used in the incoming call server to identify the sender, see 36. Typically, the incoming call server

will permit the incoming call to go through two ring sequences since the caller ID data packet is embedded between the first and second ring sequence. This will permit the incoming call server 24 to identify and record the caller-ID information, typically providing the source unit call back number. The incoming call will also include target data identifying the receiving unit number.

- 5 This can be in the form of verbal or tonal messages and is input as indicated at 38. The outgoing call server 26 uses the caller ID information at 40 to initiate a call at 42 to the source 16 likewise uses the target data to initiate a call to the receiving unit 18.

The caller can input the target data during the initial call or can wait until the computer calls back and input the target data at that time. The target data may comprise a call number or

H10 system stored data from file server 28. It may be in the form of a short cut or voice command or other format. Outgoing call server 26 receives this information and initiates a call as shown at 44 to the target unit 18. After placing the outgoing call to the target unit, the outgoing call server bridges (see 46) the target unit 18 to the source unit 16. This may be accomplished by using a standard call conferencing feature of PBX technology. Of course, multiple target units 18a-n  
15 may be connected in this manner to facilitate conference calls.

Also, the source unit 16 may connect to a local system 20 in this manner and the target may or may not be a local unit. Long distance calls may be connected using the system of the present invention and voice over IP technology to permit the Internet to be used as the carrier for the long distance call, eliminating long distance charges associated with common carriers.

20 The system of the subject invention permits telephone calls to be made from a source or sender unit to a target or multiple targets, wherein the source unit or billed unit configures the call in the most cost effective manner using a computer based support system to reconfigure the call into the intended setup. It is to be understood that the invention is not limited to the exact details of the construction, operation, exact materials or embodiment shown and described, as obvious  
25 modifications and equivalents will be apparent to one skilled in the art. For example, if a rate differential existed for incoming calls to a land line, the method would be equally effective. Accordingly, the invention is therefore to be limited only by the scope of the appended claims.